CEKENAS END OF TERM ONE EXAM-2022

FORM FOUR

Kenya Certificate of Secondary Education. (K.C.S.E)

AGRICULTURE

PAPER 1

MARKING SCHEME

SECTION A
ANSWER ALL QUESTIONS IN THIS SECTION

1. State four reasons for practicing grafting in citrus production (2mks)

- Plants with desirable root characteristics but with undesirable fruits can be used to produce desirable fruits.
- Facilitates changing the top of the tree from being undesirable to desirable.
- Makes it possible to grow more than one type of fruit on the same plant.
- Repair of damaged trees.
- Shorten maturity age.
- Less thorny.

(4 x ½ mks)=2mks

2. Mention four types of soil erosion by water (2mks)

- Splash/Raindrop erosion
- Sheet erosion
- Rill erosion
- Gully erosion

(4 x ½ mks) =2mks

3. Differentiate between coppicing and pinching out (2mks)

Coppicing is a method of harvesting trees by cutting the stem to leave about 15cm above the ground, while pinching out is a method of pruning where the terminal bud is removed to encourage lateral growth.

(Mark as a whole)

4. Give four benefits of possessing certificate of land ownership (2mks) -

Can be used to secure credit facilities

- Confer security of tenure
- Encourages the farmers to invest on long term projects
- Enable the land owner to lease part of whole of the land

(4 x ½ mks)

5. Give one reason why each of the following nursery management practices are carried out. (2mks)

(i) Hardening off

- Prepares the seedlings to adapt to the ecological conditions of the seedbed

(ii) Watering before transporting seedlings from the nursery bed

- Enable lifting seedlings with a lump of soil

(2 x 1 = 2mks)

6. Name four effects of excessive nitrogenous fertilizer application on tomatoes (2mks)

- Blossom end rot
- Too much vegetative growth
- Cracking of fruits before maturity
- Prolonged maturity

(4 x ½ mks) =2mks

7. State four early maturing varieties of cabbages (2mks)

- Sugar loaf
- Mukuki
- Golden acre
- Gloria hybrid
- Copenhagen market

(4 x ½ mks) =2mks

8. State four ways by which Agriculture contributes to national development (2mks)

i) Food supply
ii) Market for industrial goods
iii) Foreign exchange
iv) Source of raw materials
v) Tax to government

(4 x ½ mks) =2mks

9. List four methods of land acquisition (2mks)

- Inheritance
- Buying
- Settlement and resettlement by government
- Compensation

(4 x ½ mks) =2mks

10. State four roles of trees in soil and water conservation (2mks)

- Protects soil against strong rain drops
- Act as windbreakers
- Roots bind soil particles together preventing soil erosion
- Reduce speed of surface run-off
- Leaves decay to supply humus

(4 x ½ mks) =2mks

11. State any four types of livestock farming (2mks)

- Pastoralism
- Fish farming
- Bee keeping
- Poultry keeping

(4 x ½ mks) =2mks

12. a) State two ways by which a soil of pH 3 can be raised to pH 5 (1 mk)

- Application of lime
- Application of basic fertilizer

b) Name any two types of soil structures **(2mks)**

- Single-grained
- Crumby
- Granular
- Prismatic/columnar
- Platy
- Blocky

(2x ½=1mk)

13. State four factors that determine the number of secondary cultivation to be done on a seedbed **(2mks)**

- Size of planting materials
- Slope of land
- Moisture content of soil
- Condition of land after primary cultivation

(4 x ½ mks) =2mks

14. Mention any four factors that should be considered when selecting site for making compost manure **(2mks)**

- Well drained place
- An accessible area
- Located at the centre of the farm
- Away from the direction of prevailing wind

15. a) Define the following terms:

i) Opportunity cost **(½ mk)**

Is the value of the foregone alternative

ii) Agricultural economics **(½mk)**

A branch of Agriculture that deals with utilization of scarce resources

b) Give two types of farm records that a large scale farmer should keep **(1mk)**

- Health records
- Breeding record
- Inventory record
- Production record

(2 x ½ = 1mk)

SECTION B

ANSWER ALL QUESTIONS IN THIS SECTION

16. The diagram below shows a method of irrigation

a) Identify the method **(1 mark)**

Drip/Trickle irrigation

b) State two advantages of the irrigation system named in (a) above. **(2mks)**

- Minimizes labour requirement
- No need to construct dykes
- Practised on both sloppy and flat lands
- Water does not cause erosion
- Reduce incidences of fungal diseases
- Economises on use of water
- Minimizes possible theft of pipes

(2 x 1 = 2mks)

c) State any two factors to be considered when choosing the method of irrigation to use in an area (2mks)

- Capital availability
- Topography of land
- Water availability
- Type of soil
- Type of crops to be irrigated

(2 x 1 = 2mks)

17. The diagram below is a tool used to harvest crops in the farm. Use it to answer the questions that follow

a) Identify the tool represented above (1 mark)

Cane harvesting matchet

b) Name the crop harvested by use of the tool above. (1 mark)

Sugarcane

c) Name the part labeled A on the tool (1 mark)

Cane felling hook

d) Give one reason why the crop named in (b) above should be cut at ground level (1 mark)

- To avoid loss of yield
- To ensure proper establishment of ratoon crop

(1 x 1mk)

e) Give a reason why the leaves of the crop should be removed after cutting (1 mark)

- To avoid some growth substances from flowing back
- To avoid lowering the quality of sugar

18. An agronomist recommends application of 130kg N, 55kg P_2O_5 and 65kg K_2O after testing a soil sample. Calculate the amount of urea (46%N), Single super phosphate (20% P_2O_5) and Potassium chloride (50% K_2O) that should be applied on the land. (5mks)

i) Urea (46% N)

100kg Urea → 46kg N

? ← 130kg N

$$\frac{130 \times 100}{46} = 282.6 = 283\text{kg Urea}$$

ii) SSP (20% P_2O_5)

100kg SSP → 20kg P_2O_5

? ← 55kg P_2O_5

$$\frac{100 \times 55}{20} = 275\text{kg SSP}$$

iii) KCL (50% K_2O)

100kg KCL → 50kg K_2O

? ← 65kg K_2O

$$\frac{100 \times 65}{50} = 130\text{kg KCL}$$

19. The diagram below illustrates a weed

i) Identify the weed (1 mark)

Oxalis/Oxalis latifolia/Oxalis spp

ii) State one competitive ability of the weed illustrated above. (1 mark)

Underground structures (bulbs) that regenerate

iii) State two mechanical control measures for the weed above (2mks)

- Digging out/ tillage
- Slashing
- Uprooting

(2 x 1= 2mks)

iv) Classify the weed above according to plant morphology (1 mark)

Broad-leafed

SECTION C (40 MARKS)

ATTEMPT ANY TWO QUESTIONS IN THE SPACE PROVIDED

20. a) Describe five qualities of mother plant that should be considered when selecting vegetative materials for planting (5 marks)

- High yielding
- Resistant to pests and diseases
- High quality produce
- High rooting ability
- Early maturing

b) List seven benefits of using organic matter for mulching (7 marks)

- Improves soil aeration upon decomposition
- Reduced toxicity of plant poisons upon decomposition
- Reduces soil erosion
- Improves soil structure on decomposition
- Modifies the soil temperature
- Adds nutrients on decomposition
- Improves water infiltration
- Increases microbial activity
- Controls weeds
- Reduces evaporation of water
- Buffers soil pH upon decomposition

(7 x 1-7mks)

c) Describe the field production of nappier grass under the following sub-headings

i) Planting (3 marks)

- Plant at the onset of the rains/early planting
- Select desirable nappier grass variety for the ecological area
- Use healthy planting materials
- Use cuttings/canes or splits for planting
- Cuttings/canes should have 3-5 nodes
- Select cutting from mature canes/stems
- Place planting materials in furrows/holes
- Cover the planting materials with soil to appropriate depth

ii) Fertilizer and manure application (3 marks)

- Apply phosphatic fertilizer during planting
- Apply farmyard/compost manure for planting
- Rate of organic manure should be 7-10 tons/ha
- Apply organic manure after harvest and incorporate into the soil
- Top-dress with nitrogenous fertilizer (CAN) 6-8 weeks after planting

iii) Utilization **(2marks)**

- Cut and feed to the ruminants
- Defoliate/cut at the right stage of growth 3-5 months old whne stems are 1-1.5high
- Cut the stems at 2.5-5cm above the ground surface
- Use a sharp panga for cutting
- Conserve excess as silage
- Chop napier grass into small pieces
- It can be dried and used as mulch

21. a) Describe the procedure of silage making **(8 marks)**

- Prepare the silo before harvesting the crop
- Cut the crop at the appropriate stage
- Chop up the crop and put into a silo compacting it every 10-12cm layer
- Fill the silo rapidly (preferably 2 days)
- Check the temperature regularly and maintain it at appropriate range
- Cover with polythene to protect it from water and air
- Cover the silo with a thick layer of soil to maintain the ridge appearance
- Dig a trench around the silo to drain off rain water

(8 x 1=8mks)

a) State and explain four factors that determine the depth of planting **(8 marks)**

- Soil type – plant deeper in light soils such as sands and shallower in heavy soils e.g. clay
- Soil moisture content – plant deep in dry soils to place the seeds in a moist zone
- Size of the seed – larger seeds are planted deeper in soils than the smaller ones
- Type of germination – seeds with epigeal type of germination should be planted shallower than those with hypogeal type

c) Outline four roles of Agriculture in Kenya's economy **(4 marks)**

- Food supply
- Source of employment
- Provision of foreign exchange
- Source of raw materials for industries
- Provision of market for industrial goods
- Source of money or capital

22. a) Outline seven effects of land fragmentation and subdivision **(7 marks)**

- Time is wasted while travelling from one holding to another
- Difficult to control weeds and pests
- Difficult to follow a sound farm plan
- Difficult to supervise the scattered plots
- Difficult to control parasites and diseases
- Difficult to carry out soil conservation measures
- Impossible to control grazing

(7x1=7mks)

b) State and explain three methods of pruning **(6 marks)**

- Annual pruning
  Involves the removal of branches that have borne two crops and have undesirable characteristics
- Pinching out
  Involves the removal of terminal buds
- Coppicing or pollarding
  Carried out in tree crops where branches are cut at specified points in order to achieve a desired shape

Stating – 1mk explaining – 1mk = 6mks

c) Describe the establishment of vegetative propagation nurseries (7 marks)

- Select the suitable site
- Clear and level the site
- Establish vegetative propagation unit measuring 3.66m by 1.22m
- Fill polythene sleeves measuring 7-10cm in diameter and 20-30cm long with a rooting mixture
- Water the sleeves
- Insert the cuttings seedlings at the centre of each sleeve
- Arrange the sleeves in the propagation unit
- Erect wooden loops over the sleeved cuttings
- Place polythene sheet on the loops
- Burry the polythene sheet into the ground at the edges

(7x1=7mks)